

LEGEND

Powhatan Creek Watershed	Proposed RPA Extension	Proposed Conservation Areas	Undeveloped Land
Subwatershed Boundary	Priority Regional Stormwater Management Sites	Conservation Area ID	Low Density Residential
Rpa	Priority Retrofit Sites	Bald Eagle Nest	Medium Density Residential
Rpa buffer	Catchment Boundaries	Blue Heron Colony	High Density Residential
Hydrology	Catchment Boundaries ID	RTE Plants	Mixed Use
Roads	Potential Stream Rehabilitation Area	Historical Points of Interest	Limited Industry/Business
			Rural

Powhatan Creek Watershed Subwatershed 201



Subwatershed No. 201

OVERALL PROGNOSIS:

Currently classified as **SENSITIVE**, this subwatershed could possibly shift to **IMPACTED** if the remaining 42% of developable area in the watershed is built out. The subwatershed contains a large contiguous forest tract, a large paleo-channel wetland complex, and is home to two RTE species. The consensus recommendation is to maintain the subwatershed within the **SENSITIVE** category using land conservation tools including acquisition/easement and enabling zoning to cluster down to maximize the preservation of open space / contiguous forest. Almost a fourth of the subwatershed could be protected within the RPA. Ditching, channel alteration, and beaver activity result in only Fair stream habitat scores. Portions of the wetland have been ditched, but are candidates for restoration.

See Figure

Drainage Area: 1.31 sq. miles (835.7 acres)

Land Use in Subwatershed 201

	<i>Percentage</i>	<i>Subwatershed Category</i>
2000 Impervious Cover	6.8 %	Sensitive
Future impervious cover (with buildout)	12.3 %	Impacted
Future impervious cover (with conservation area protection)	8.0 %	Sensitive
Target subwatershed classification		Sensitive

Developable area in subwatershed: 354.6 acres or 42.4% of subwatershed area

Priority Conservation Areas in 201

<i>Table 201-1. Priority Conservation Areas in Subwatershed 201</i>			
<i>Conservation Area</i>	<i>Description</i>	<i>Conservation Area Ranking</i>	<i>Acquisition Ranking</i>
C-1	<i>Paleochannel wetlands and rare plants adjacent to Mainland farm</i>	<i>2 of 21</i>	<i>1 of 17</i>
C-4	<i>Large tract of mature contiguous forest (.5 square mile of forest) Loblolly pine, red maple and green ash</i>	<i>11 of 21</i>	<i>9 of 17</i>
C-6	<i>Recent nesting site for bald eagle</i>	<i>14 of 21</i>	<i>12 of 17</i>

Wetland areas: The largest wetland (C-1) outside of the mainstem of Powhatan Creek located on an old paleo-channel of the creek. The wetland is nearly a square mile in size, and contains a mix of deep water, shallow water, and seasonally inundated zones. Other, smaller wetland areas in C-4 are present in the upper

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portion of the subwatershed, although they were ditched and drained several decades ago. These areas may be excellent candidates for wetland restoration.

Beaver dam complexes: Strong influence. Almost a half mile length of the paleo-channel wetland has been inundated by beaver activity.

Historic Sites:

Green Spring Plantation--Located on 196 acres of National Historic Park property, Green Spring was the plantation home of Royal Governor Berkeley in the 17th century. It was America's first great experimental farm. It served briefly as the Capital of Virginia after Bacon's Rebellion. The jail where rebels were held still stands today. During the Revolutionary War, The Battle of Green Spring was fought nearby just four months before the Battle of Yorktown. The 18th century manor house rebuilt by William Ludwell-Lee was destroyed by Union troops during the Civil War. Plans to revitalize and preserve the numerous archaeological remains of this historic site are underway by the Friends of Green Spring.

Mainland Farm--Not long after 1607, the colonists realized that better farming opportunities awaited them on the mainland, or "Main." Mainland Farm is the oldest (1618) continuously running farm in America. Reflecting this fact, James City County has raised \$2 million needed to preserve this 217-acre historic treasure.

Stream Conditions in 201

Table 201-2. General Stream Condition in Subwatershed 201		
<i>Stream Quality</i>	<i>Description</i>	<i>Rank</i>
<i>Fair</i>	<i>Streams within C-4 have been historically ditched and channelized Candidates for restoration.</i>	<i>11 of 11</i>

Habitat assessment: Despite the relatively low impervious cover in the subwatershed, the initial stream assessment scores for the streams in the subwatershed are only rated as fair. The scores are among the lowest in the entire subwatershed. The relatively low subwatershed habitat score may reflect some unique physical and historical conditions that have occurred in the subwatershed. These include relatively flat terrain and stream gradients, historical ditching and channelization and the strong influence of beaver dam inundation on the free-flowing stream network in this subwatershed.

Stormwater Management in 201

Subwatershed 201 was divided into four catchments. The lower portion of the subwatershed is largely developed with stormwater management, whereas the upper portion is a preferred conservation area. The major stormwater management strategy involves using on-site stormwater management for future development, in conjunction with cluster or open space design, to limit disturbance to recommended conservation areas.

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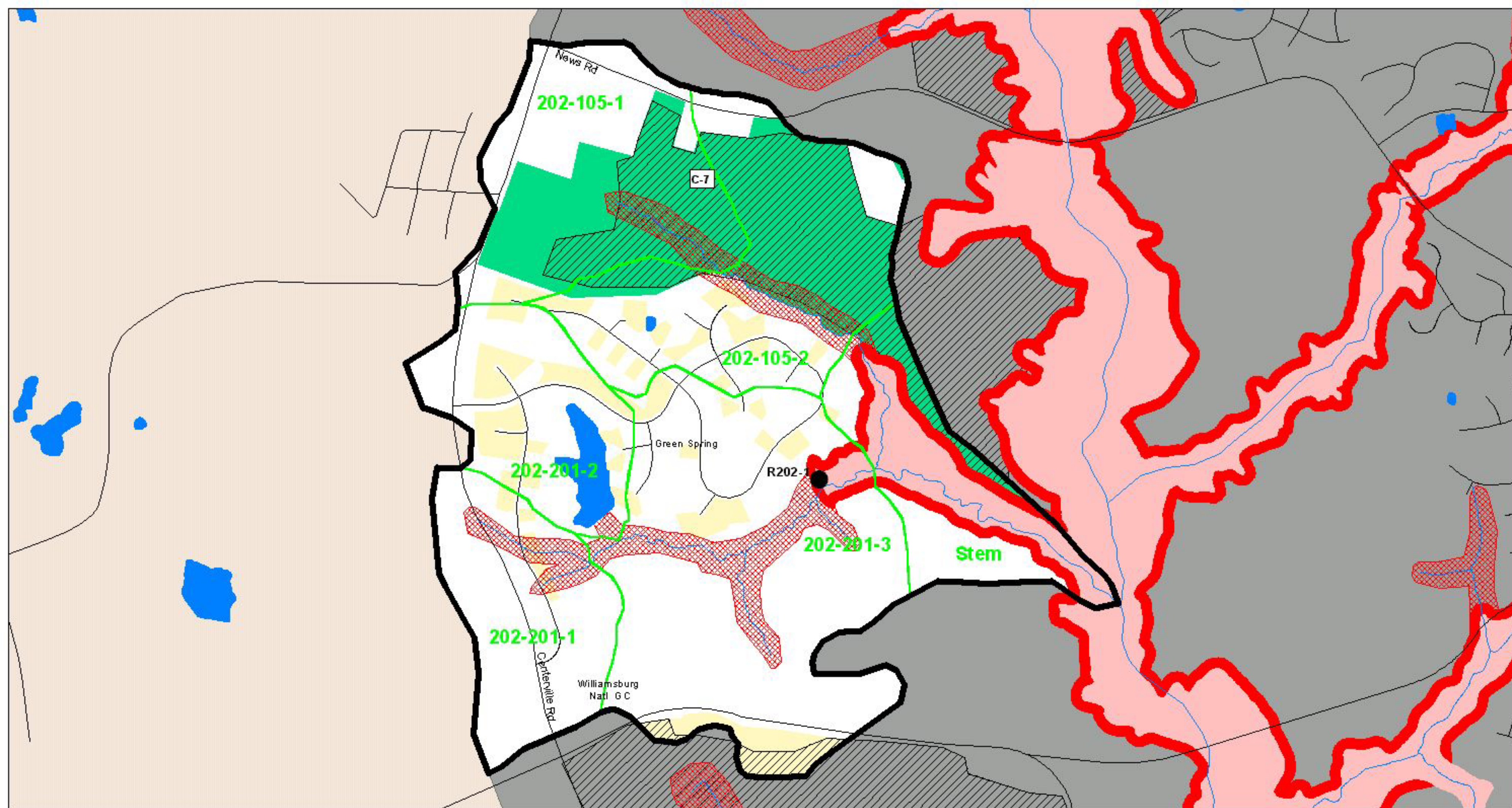
Recommendations for Subwatershed 201

Land Conservation

- Allowances in the zoning to cluster down while still maintaining the same density. (See Land Use Planning Section). Specifically, cluster development on the east side of C-4 and near the Paleochannel (C-1) to preserve as much of the contiguous forest and buffer as possible.
- Acquisition or easement of some of the contiguous tract adjacent to the park service land and continued protection of the Paleochannel and Mainland farm.
- Acquisition/easement of the tract associated with the recent bald eagle nesting site (C-6)
- Continued designation of low density zoning.

Restoration

- Recommended wetland/stream restoration of the ditched stream on park service land

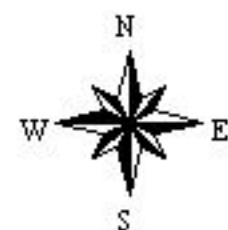


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Rpa buffer	Potential Retrofit Sites ID	Blue Heron Colony	High Density Residential
Hydrology	Catchment Boundaries	RTE Plants	Mixed Use
Roads	Catchment Boundaries ID	Historical Points of Interest	Limited Industry/Business
	Potential Stream Rehabilitation Area		Rural

Powhatan Creek Watershed Subwatershed 202

900 0 900 1800 Feet



Subwatershed No. 202

OVERALL PROGNOSIS:

Currently classified as borderline **SENSITIVE**, this small subwatershed is likely to become **IMPACTED** in the near future, based on the intensity of the current development and the amount of developable land remaining in the subwatershed. The recommendation is to preserve the mid sized contiguous forest in the northern portion of the watershed and use Special Stormwater Criteria to preserve the high quality northern tributary. Significant floodplain wetlands are present in this watershed and the potential exists for the presence of RTE plant species. Stream habitat conditions rank fourth overall in the watershed.

See Figure

Drainage Area: 0.94 sq. miles (601.4 acres)

Land Use in Subwatershed 202

	<i>Percentage</i>	<i>Subwatershed Category</i>
2000 Impervious Cover	6.4 %	Sensitive
Future impervious cover (with buildout)	12.2 %	Impacted
Target Watershed Classification		Sensitive

Developable area in subwatershed: 174.2 acres or 29% of subwatershed area

Priority Conservation Areas in 202

<i>Table 202-1. Priority Conservation Areas in Subwatershed 202</i>			
<i>Conservation Area</i>	<i>Description</i>	<i>Conservation Area Ranking</i>	<i>Acquisition Ranking</i>
C-7	<i>Contiguous Forest Tract with high quality stream</i>	<i>16 of 21</i>	<i>14 of 17</i>

Wetland areas: Floodplain wetlands associated with the stream.

Stream Conditions in 202

<i>Table 202-2. General Stream Condition in Subwatershed 202</i>		
<i>Stream Quality</i>	<i>Description</i>	<i>Rank</i>
<i>Good</i>	<i>Tributary in C-7 ranked excellent and the southern tributary ranked good.</i>	<i>5 of 11</i>

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Habitat assessment: The initial stream assessment scores for the streams in the subwatershed indicate generally good stream and floodplain conditions, yet there were noticeable impacts in terms of in-stream habitat and sediment deposition. Scores for streams in subwatershed 202 were the fifth highest in the entire watershed. Both the streams and associated floodplains are generally intact in the upper headwaters, except for encroachment into the RPA by a golf course. While impervious cover is low in this subwatershed, land development activities have been concentrated adjacent to the stream valley. This may be exerting a more direct impact on stream quality than if the development were evenly distributed throughout the watershed. In addition, a significant fraction of the stream mileage has been impounded by on-line stormwater ponds and beaver activity.

Stormwater Management in 202

Subwatershed 202 has been divided into six catchments between two major stems. The drainage area to the lower stem is largely built out, whereas the drainage area to the upper stem is mainly forested. This upper stem is a recommended Stream Protection Area and a preferred conservation area. Major stormwater management strategies include the application of the Special Stormwater Criteria to the catchments draining to the upper stem, and a retrofit of an existing facility to provide better channel protection.

<i>Table 202-3. Priority Stormwater Retrofit Areas</i>			
<i>Retrofits</i>	<i>Type of Retrofit and Rank</i>		<i>Benefit</i>
	<i>Regional Ponds for Future Development</i>	<i>Stormwater Retrofit</i>	
202-1	--	2 of 17	Retrofit of dry pond to provide channel protection.

Recommendations for Subwatershed 202

Land Conservation

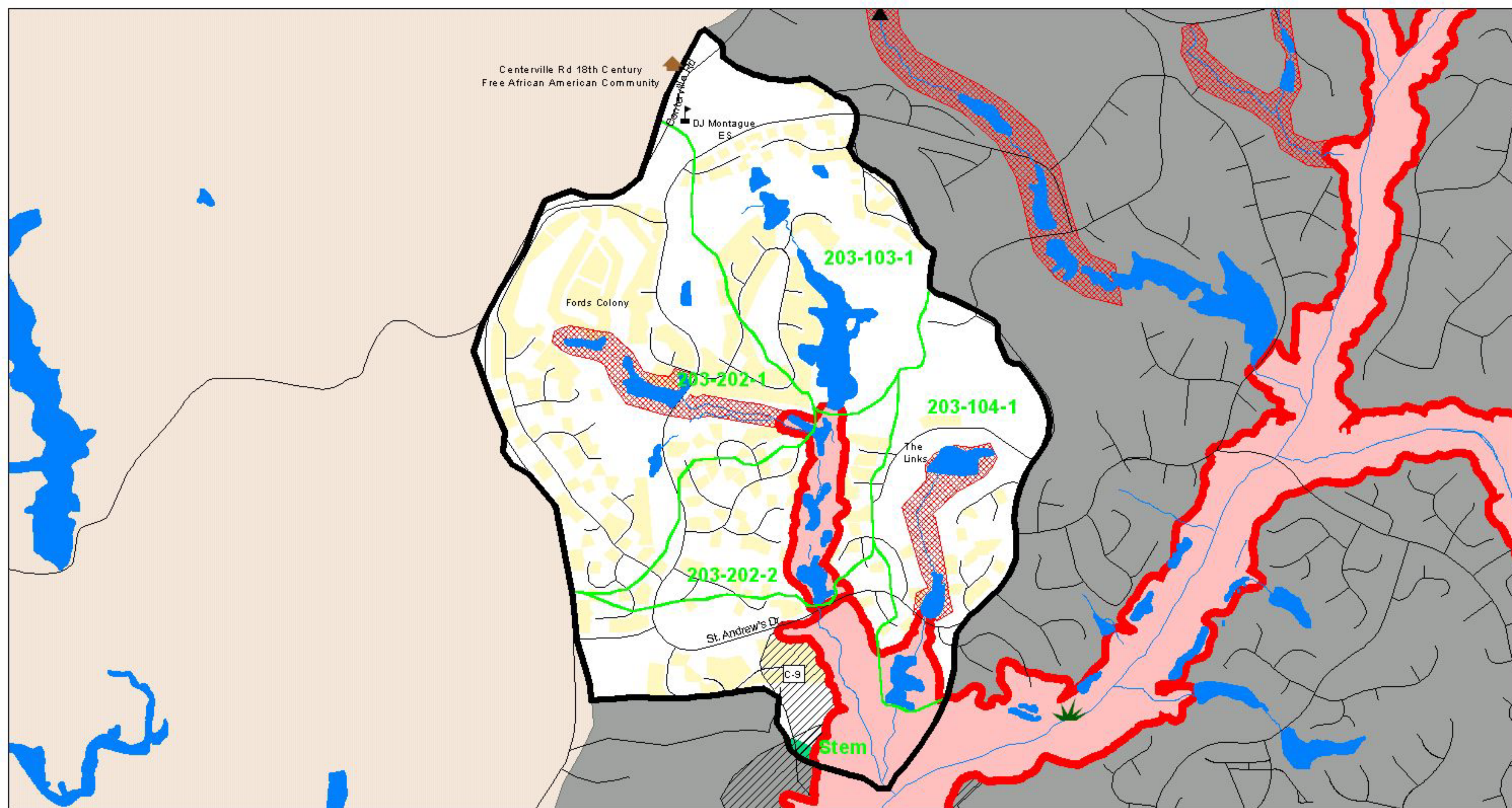
- Conservation easement or acquisition of the C-7 tract
- Continued agricultural zoning of the C-7 tract

Aquatic Buffers

- Concentrate required open space along streams and wetlands.

Stormwater Management

- Special Stormwater Criteria (SSC) for additional development draining to the northern tributary of 202
- One priority stormwater retrofit (202-1)

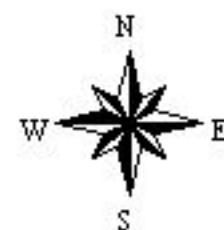


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 Hydrology	 Catchment Boundaries	 RTE Plants	 Mixed Use
 Roads	 Catchment Boundaries ID	 Historical Points of Interest	 Limited Industry/Business
	 Potential Stream Rehabilitation Area		 Rural

Powhatan Creek Watershed Subwatershed 203

1150 0 1150 2300 Feet



Subwatershed No. 203

OVERALL PROGNOSIS:

This subwatershed, which spans part of the Fords Colony planned unit development, has shifted from SENSITIVE to IMPACTED in the last two years. About 10% of the subwatershed is protected by RPAs where several high quality floodplain wetlands exist. Few upland forest areas remain. Stream habitat conditions were only rated as Fair, which reflects the influence of channel alteration, and the presence of nine golf course and stormwater ponds constructed in the stream network. Fords Colony is nearing completion in this subwatershed; consequently, less than 20% of the subwatershed can be developed in the future. This may be a watershed that is appropriate for continued growth because of the existing stormwater management in almost 100% of the watershed, low stream habitat scores and only one significant conservation area. However, this conservation area (adjacent to the blue heron rookery) should be preserved and subject to Special Stormwater Criteria (SSC).

See Figure

Drainage Area: 1.33 sq. miles (849.4 acres)

Land Use in Subwatershed 203

	Percentage	Subwatershed Category
2000 Impervious Cover	10.5 %	Impacted
Future impervious cover (with buildout)	13.0 %	Impacted
Target Watershed Classification		Impacted

Developable area in subwatershed: 174.2 acres or 29% of subwatershed area

Priority Conservation Areas in 203

<i>Table 203-1. Priority Conservation Areas in Subwatershed 203</i>			
<i>Conservation Area</i>	<i>Description</i>	<i>Conservation Area Ranking</i>	<i>Acquisition Ranking</i>
C-9	<i>Extended protection of the blue heron colony and contiguous forest found between subwatershed 203 and the mainstem of Powhatan Creek.</i>	<i>7 of 21</i>	<i>5 of 17</i>

Wetland areas: Floodplain wetlands associated with the stream.

Historic Sites:

Centerville Road 18th Century Free African-American Community--In 1802, William Ludwell-Lee freed his slaves and gave them land on his Hot Water site (a subsidiary of Green Spring). It was the first community in Virginia developed solely for emancipated blacks. The tract remained under Lee-descendent control until the 1840s when it was sold to absentee owners. It dissolved after the 1860s.

Stream Conditions in 203

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Table 203-2. General Stream Condition in Subwatershed 203

Stream Quality	Description	Rank
<i>Fair</i>	<i>Natural hydrology of streams is highly affected by ponds, golf courses and development in this subwatershed.</i>	<i>10 of 11</i>

Habitat assessment: Stream assessment scores indicate only Fair habitat conditions in free-flowing streams, which was the second lowest score recorded anywhere in the watershed. Streams appear to be enlarging in response to recent development. The streams are also affected by an adjacent golf course and recent beaver activity. The stream channels between the golf course ponds has been piped, and little natural stream channel exists above News Road. Below News Road, the stream is influenced by an extensive wetland complex. This may be a watershed that is appropriate for continued growth because of the existing stormwater management, low stream habitat scores and the absence of conservation areas.

Stormwater Management in 203

Subwatershed 203 has been divided into 5 catchments that all fall entirely within Ford's Colony where conservation concerns include the protection of the heron rookery at the bottom of the subwatershed, as well as preservation of the remaining contiguous forest. Stormwater management strategies include introducing the use of on-lot practices to reduce stormwater runoff and pollutant loading, pondscaping existing facilities with native wetland species, and reforestation of riparian areas. No retrofits are recommended for this subwatershed.

Recommendations for Subwatershed 203

Land Conservation

- Land acquisition or easement of C-9 tract associated with the heron colony and extensive wetland and contiguous forest system

Watershed Education

- Homeowner education on low impact lawn care, pet waste, and other water quality issues (See Appendix B and accompanying CD)
- Work with Drew Mulhare and Ford's Colony to examine turf nutrient management and buffer management on the golf course. These partnerships can lead to opportunities to reduce nutrient inputs and increase buffer widths.

Aquatic Buffers

- Look for opportunities to increase aquatic buffers on streams

Stormwater Management

- Naturescaping golf course ponds i.e. planting native wetland plants for better nutrient uptake and natural aesthetic
- Special Stormwater Criteria for the drainage associated with the C-9 conservation area